

Appl. No. 10/030,867
Amdt. Dated December 13, 2006
Reply to Office Action of September 20, 2006

Attorney Docket No. 81839.0105
Customer No.: 26021

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Cancelled).
2. (Currently Amended): The method for growing a semiconductor single crystal according to Claim 1 4, wherein the heating by the subsidiary heating means is performed so that temperature gradient of the single crystal surface along the pulling axis direction is constant.
3. (Currently Amended): The method for growing a semiconductor single crystal according to Claim 1 4, wherein electric power values of the heater surrounding the crucible and the subsidiary heating means and/or a ratio of the both power values are obtained by calculation based on global heat transfer analysis, the obtained value(s) is/are used as a target value or values of control, and electric powers supplied to the heater and the subsidiary heating means are controlled to approach the target value or values during the pulling of the single crystal.
4. (Currently Amended): A method for growing a semiconductor single crystal according to the Czochralski method utilizing an apparatus for producing a semiconductor single crystal having a crucible to be charged with a raw material, a heater surrounding the crucible, pulling means for bringing a seed crystal into contact with a melt contained in the crucible and growing a single crystal and a metal chamber for accommodating the foregoing members, wherein a crucible having an inner diameter of 28 inches or more is used and the apparatus is

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provided with subsidiary heating means below the crucible, and the single crystal is pulled with subsidiarily heating the crucible by the subsidiary heating means in addition to the heating by the heater surrounding the crucible for a period after a ratio of a weight of the growing crystal during the pulling of the crystal relative to a weight of raw material melt before the growing becomes 60% or more, and after the grown single crystal is detached from the melt and taken out from the apparatus for producing a crystal, a raw material is newly added to the raw material remained in the crucible and melted, and when a seed crystal is brought into contact with the melt to pull a single crystal again, the crucible is heated by the heater surrounding the crucible and the subsidiary heating means to prevent solidification of raw material melt at least for a period from the point of the detachment of the single crystal ingot to the point of complete melting of the raw material in the crucible including the raw material newly added thereto and the electric power supplied to the subsidiary heating means is increased when the raw material is newly added to the raw material melt remaining in the crucible.

5. (Previously Presented): The method for growing a semiconductor single crystal according to Claim 2, wherein electric power values of the heater surrounding the crucible and the subsidiary heating means and/or a ratio of the both power values are obtained by calculation based on global heat transfer analysis, the obtained value(s) is/are used as a target value or values of control, and electric powers supplied to the heater and the subsidiary heating means are controlled to approach the target value or values during the pulling of the single crystal.